

CLIPPEDIMAGE= JP411330575A

PAT-NO: JP411330575A

DOCUMENT-IDENTIFIER: JP 11330575 A

TITLE: PIEZOELECTRIC TRANSFORMER AND ITS MOUNTING METHOD

PUBN-DATE: November 30, 1999

INVENTOR-INFORMATION:

NAME

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APPL-NO: JP10130658

APPL-DATE: May 13, 1998

INT-CL (IPC): H01L041/08

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a compact, low-height piezoelectric transformer suited for mounting on a board.

SOLUTION: The piezoelectric transformer comprises inner electrodes 16a, 16b and ceramic layers alternately laminated in the thickness direction, utilizing a radial resonance mode of a piezoelectric transformer disc 11. An input 12 and output 13 located at upper and lower positions in the thickness direction use a radial oscillation mode and an insulation layer 14 is provided between the input 12 and output 13.

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CLIPPEDIMAGE= JP411330580A

PAT-NO: JP411330580A

DOCUMENT-IDENTIFIER: JP 11330580 A

TITLE: PIEZOELECTRIC TRANSFORMER, ITS MANUFACTURE AND ITS
DRIVING METHOD

PUBN-DATE: November 30, 1999

INVENTOR-INFORMATION:

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APPL-NO: JP10138802

APPL-DATE: May 20, 1998

INT-CL (IPC): H01L041/107

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a piezoelectric transformer suited for the high power use wherein the power resistance is improved with the increase of the safety factor to the breakdown strength and application easiness of the current is improved with the increase of the capacitance.

SOLUTION: An input electrode 13, output electrode 14 and common electrode 15 are provided on opposed main planes, and at least two disc-like or ring-like piezoelectric members polarized in the thickness direction are laminated on the

main planes and made so as to drive in the radial
oscillation mode whereby a
piezoelectric transformer suited for the high power use is
obtd. wherein the
mutually laminated electrodes among the electrodes 13-15
are pref. formed in
one body.

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CLIPPEDIMAGE= JP02000082853A

PAT-NO: JP02000082853A

DOCUMENT-IDENTIFIER: JP 2000082853 A

TITLE: PIEZOELECTRIC TRANSFORMER DEVICE AND ITS DRIVING METHOD

PUBN-DATE: March 21, 2000

INVENTOR-INFORMATION:

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APPL-NO: JP10251090

APPL-DATE: September 4, 1998

INT-CL (IPC): H01L041/107;H02M011/00

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a piezoelectric transformer which can obtain a larger output at the same driving frequency by avoiding the influence of its shape, and can maintain required output power when its size is reduced due to a higher frequency, and a method for driving the transformer.

SOLUTION: A piezoelectric transformer 20 is provided with parallel piezoelectric transformer elements 10 and 10'. On the side face of one transformer element 10, input-side terminal electrodes 1 and 2 which are primary-side terminals and output-side terminal electrodes 3 and 4 which are secondary-side terminals are formed. On the side face of the other element 10'

similarly, input-side terminal electrodes 1' and 2' and output-side terminal electrodes 3' and 4' are formed. Namely, the transformer elements 10 and 10' are connected in parallel with a power source 5 and a load 8.

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CLIPPEDIMAGE= JP02000236123A

PAT-NO: JP02000236123A

DOCUMENT-IDENTIFIER: JP 2000236123 A

TITLE: PIEZOELECTRIC TRANSFORMER, MANUFACTURING AND
ACTIVATING METHOD THEREOF

PUBN-DATE: August 29, 2000

INVENTOR-INFORMATION:

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ASSIGNEE-INFORMATION:

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MATSUSHITA ELECTRIC IND CO LTD

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APPL-NO: JP11036904

APPL-DATE: February 16, 1999

INT-CL (IPC): H01L041/107

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a piezoelectric transformer which is enhanced in safety factor to breaking strength, improved in withstand voltage, and hardly broken down.

SOLUTION: A generating part 141 is coaxially stacked up on an activating part 111, the activating part 111 is polarized in the thickness direction, electrodes 13a and 13b are each formed on primary surfaces 12a and 12b which face opposite to each other in a thickness direction, the generating part 141

is polarized in the radial direction, and electrodes 16a and 16b are each formed on the center and peripheral part of the generating part 141.

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CLIPPEDIMAGE= JP02000294847A

PAT-NO: JP02000294847A

DOCUMENT-IDENTIFIER: JP 2000294847 A

TITLE: PIEZOELECTRIC TRANSFORMER

PUBN-DATE: October 20, 2000

INVENTOR-INFORMATION:

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ASSIGNEE-INFORMATION:

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APPL-NO: JP11096121

APPL-DATE: April 2, 1999

INT-CL (IPC): H01L041/107

ABSTRACT:

PROBLEM TO BE SOLVED: To obtain a piezoelectric transformer which does not generate heat nor cause vibration inhibition and waveform distortion.

SOLUTION: In a piezoelectric transformer which is driven in a spreading vibration mode, piezoelectric power generating sections 12a and 12b and a piezoelectric driving section 11 are laminated upon another along the direction of polarization of the transformer, and, at the same time, a through hole 19 is

formed in the laminating direction at the node point of the laminate 18 and its vicinity. Therefore, the mechanical vibration loss of the transformer caused by local high heat generation or stress concentration can be prevented by dispersing stresses along the peripheral edge of the through hole 19.

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CLIPPEDIMAGE= JP02001068752A

PAT-NO: JP02001068752A

DOCUMENT-IDENTIFIER: JP 2001068752 A

TITLE: PIEZOELECTRIC TRANSFORMER

PUBN-DATE: March 16, 2001

INVENTOR-INFORMATION:

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APPL-NO: JP11244500

APPL-DATE: August 31, 1999

INT-CL (IPC): H01L041/107

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a small piezoelectric transformer which is capable of outputting a high power and a large current under a low load.

SOLUTION: This piezoelectric transformer has such a structure where a voltage input part 21, voltage output part 22, and a voltage input part 23 are successively formed in a lengthwise direction on the piezoelectric board 17 whose surfaces are both rectangular, inner electrode layers 19 and piezoelectric layers 18 are alternately laminated on the voltage input parts 21 and 23 and the voltage output part 22 respectively, and the piezoelectric layers 18 each formed on the top and under surface of the

inner electrode layer
19 are polarized in the direction of lamination and
opposite to each other in
the direction of polarization and longitudinally vibrated
to the crosswise
direction of the main surface.

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CLIPPEDIMAGE= JP411317553A

PAT-NO: JP411317553A

DOCUMENT-IDENTIFIER: JP 11317553 A

TITLE: LAMINATED PIEZOELECTRIC TRANSFORMER

PUBN-DATE: November 16, 1999

INVENTOR-INFORMATION:

NAME

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ASSIGNEE-INFORMATION:

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APPL-NO: JP10124836

APPL-DATE: May 7, 1998

INT-CL (IPC): H01L041/107

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a laminated piezoelectric transformer which is small in mechanical vibration energy loss, adjustable over a wide range of a transformation ratio without increasing the volume, and takes advantage of a radial- direction symmetrical vibration mode.

SOLUTION: A piezoelectric ceramic disk 1 is 10 mm or so in diameter and 1 mm or so in thickness. An area ratio of an input electrode 2 and an output electrode 3 provided to the surfaces of the piezoelectric ceramic disk 1 to the surface area of the piezoelectric ceramic disk 1 is set at 18% and 72%. Twelve pieces of piezoelectric ceramic disks, which are each polarized in

a thicknesswise direction, are laminated in a thicknesswise direction and bonded together.

Lead wires 6 and 7 are each connected to the input sides and output sides of the twelve piezoelectric ceramic disks. A maximum efficiency 94% of a laminated piezoelectric transformer is obtained in a frequency range of 450 to 470 kHz. A load of 50

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